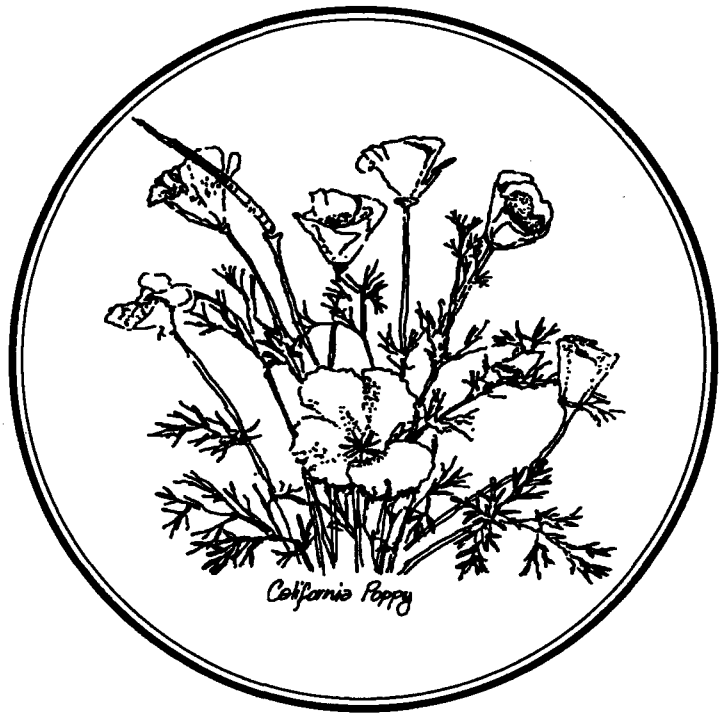
COUNTY of SAN DIEGO

LANDSCAPE WATER CONSERVATION DESIGN MANUAL

Department of Planning and Land Use



CONTENTS

CONTENTS *(continued)*

SECTION III

CONTENTS *(continued)*

SECTION IV

SECTION V

APPENDIX A

INTRODUCTION

This Water Conservation and Landscape Design Manual implements Section 6712 (d) of the County Zoning Ordinance:

"d. **Water Conservation and Landscape Design Manual.** The design, dimensions, preparation, construction, piping specifications, planting, and irrigation of landscaped spaces, and/or hardscape spaces shall conform to the requirements of the Water Conservation and Landscape Design Manual. The Director may administratively waive or modify one or more such requirements when practical difficulties make their strict application infeasible, and upon a determination that the waiver or modification is consistent with the purpose and intent of the Water Conservation and Landscape Design Manual and this section. In case of conflict between the landscaping requirements of the Off-street Parking Design Manual and Water Conservation and Landscape Design Manual, the requirements of the Water Conservation and Landscape Design Manual shall prevail. The Director shall submit any amendments to the Water Conservation and Landscape Design Manual to the Planning Commission for its review and comment prior to transmitting them to the Board of Supervisors."

The purpose of the County's water conservation and landscape regulations is to establish specific standards for landscape design and installation to assure available water resources are put to beneficial use for all citizens of the County.

SECTION 1

WATER MANAGEMENT PLAN

a. The applicant shall submit a Water Management Plan to the satisfaction of the Director of Planning and Land Use. The Water Management Plan shall be submitted or plan checked pursuant to Section 6713 of The Zoning Ordinance. The Water Management Plan shall address water management procedures and equipment and their application to plant materials and seasonal use. The owner or his agent shall be responsible for implementation of the Water Management Plan.

b. When reclaimed water is available within the basin containing the project site or when a Reclamation Master Plan indicating the availability of reclaimed water in the future has been adopted by either the County or a special district, the applicant shall incorporate the use of reclaimed water into the project design, except in the vicinity of any location where food is served or consumed. In this case, the original project shall provide for a dual distribution system for all landscaped areas.

c. In the event of a declared water shortage, or mandatory or voluntary water conservation measures, the project shall comply with all water allocation programs adopted by State and local government authorities. In the event of any conflict between such programs and these regulation, the stricter conditions shall apply.

d. A Water Management Plan shall consist of the following elements:

1. **Introduction** - To include the project address and project location, a statement of purpose, and the goals of the Water Management Plan.

2. **State of Site Conditions** - To include a description of the site; climatic conditions; annual precipitation rates; anticipated evapotranspiration rates; and proposed water source and quality.

3. **Water Requirements** - To include anticipated water demand in inches per year for all varieties of planted areas.

4. **Water Delivery Systems** - To include the type of irrigation system to be used; water conservation methods to be applied (low precipitation heads, irrigation override systems, drip irrigation systems, etc.); precipitation rates for each variety of planted irrigated area.

5. **Summary of Water Conservation Methods and Water Savings** - Summarize the above water conservation methods.

6. The Water Management Plan must not foster mosquito breeding.

SECTION II

GENERAL LANDSCAPING REQUIREMENTS/PLANTING REGULATIONS

General

a. All plants selected are to be those most suited to the actual site conditions.

b. **Turf.** The intent of these guidelines is that areas of turf shall be minimized and concentrated where used. Minor Deviations will be permitted provided the overall intent of the policy remains intact.

1. Turf shall not be allowed in areas smaller than six feet in width in all directions.

2. Turf shall not be allowed on slopes of 33 percent grade (3:1) or greater.

3. Turf shall not be allowed in center island median strips or parking lot islands.

4. Turf, in areas designated for active use, shall not be allowed in locations inaccessible and unusable to the public or site occupants.

5. Turf shall not be allowed in areas not visible to the public or site occupants, i.e., backs of buildings, service areas, behind fences and screens, unless this area is designated for an active use.

6. Decorative cool season turf shall not exceed 15 percent of the landscape area.

7. All large turf areas in projects such as, but not limited to, ball fields, cemeteries and parks shall be designed with emphasis on elimination of turf not essential to its operation.

c. **Vehicular Use Areas Not Within Street Rights-of-Way.** Landscape improvements, including, but not limited to, plants, berms, signs, and structures shall be selected, positioned, and maintained to avoid obstructing views of motorists near intersections of aisles, drives, and pedestrian walkways. Trees shall be selected and maintained such that, at mature size, scaffold branches are a minimum of 60 inches above the finish grade as measured at the trunk. Plant materials with known surface root problems shall not be used in vehicular use areas, paved pedestrian walkways, and structures with poured concrete slabs.

d. **Timing and Maintenance.** All required plantings and irrigation shall be in place prior to use or occupancy of new buildings or structures. All required plantings shall be maintained in good growing condition, and whenever necessary, shall be replaced with similar plant materials to ensure continued compliance with applicable landscaping, buffering, and screening requirements. All landscaping and irrigation systems shall be properly maintained.

e. **Prescribed Heights.** When plant materials are used to satisfy screening requirements, planting shall be spaced to ensure 100 percent screening within two years of installation. All plant material will be spaced according to acknowledged characteristics of the plants' growth.

f. **Drainage.** All planting areas shall have positive surface drainage. Concentrated flow shall be handled on-site and daylighted at the street or into an existing drainage channel or system.

g. **Staking.** All trees which are not self-supporting must be staked or cabled. Stakes or cables are to be removed once the tree is self-supporting.

h. **Groundcover.**

1. Herbaceous groundcovers shall be planted at a distance that will typically ensure 100 percent coverage within one year of installation.

2. Areas between woody groundcovers shall be covered with a mulch layer or at least 1.5 inches or herbaceous groundcovers.

i. For irrigated areas, the rate of seed application shall be sufficient to typically provide 100 percent coverage within two growing seasons.

j. **Soils.**

1. The applicant shall provide evidence of a laboratory soils analysis only if rough grading has occurred prior to project application.

2. The certifier (see Section 6717.d of The Zoning Ordinance) shall provide evidence of a laboratory soils analysis and that the recommendations were taken into consideration in the amendment and fertilization specifications.

3. Soils shall be amended and fertilized in consideration of a laboratory analysis of the planting soil. The laboratory analysis shall include, but not be limited to pH, Ec (salt content), nutrients (N) nitrogen, (P) phosphorus, (K) potassium and soil texture.

Transitional Landscapes

a. Transitional landscape treatments between non-native landscapes and undeveloped areas may be approved by the Director of Planning and Land Use.

b. The plants specified for transitional landscapes, including slopes and other disturbed areas shall typically consist of a combination of a site adaptive and compatible native and non-native species. The mix of native and non-native plants materials should generally vary with areas contiguous to existing native vegetation being planned with predominantly native material.

c. Invasive (i.e., those capable of reproducing and spreading into native, non-irrigated areas and displacing those communities) non-native plant species are prohibited in all transitional landscapes. Invasive plants that sprout in transition areas shall be promptly abated.

SLOPE EROSION CONTROL

General

a. Except where approved otherwise, all slopes and any other areas disturbed in conjunction with grading activities shall be adequately covered with nurse crops, groundcovers, mulches, jute mesh, or any combination thereof by hydroseed or other approved method.

b. Common lawn grasses shall not be used on slopes greater than 3:1.

c. A minimum of 50 percent of the total slope area of manufactured slopes shall be planted with deep rooting plantings (i.e., those with a typical root depth of approximately 5 feet or greater). For seeded plantings, at least 50 percent of the viable seed count shall be deep rooting species.

d. All plant materials on manufactured slopes shall be appropriate to the site conditions, shall be water conserving when established and shall be adequately spaced to control soil erosion.

e. All slopes steeper than 3:1 and higher than 15 feet shall be planted with rooted container stock at an average rate of one per 100 square feet unless approved otherwise by the Director of Planning and Land Use. All container stock shall be provided with a temporary irrigation system.

f. All manufactured slope areas shall be covered within 30 days of completion of grading with hydroseed/mulch, punched straw mulch, jute netting or other approved geotextile material capable of controlling surface soil erosion.

CONFLICT WITH CALIFORNIA PUBLIC RESOURCES CODE

It is recognized that the California Public Resources Code establishes certain minimum requirements for brush clearance and also grants local governing agencies authority to promulgate and enforce additional fire code requirements as necessitated by local conditions. Consequently, when any conflict arises between these regulations and local fire agency regulations, those of the local fire agency shall prevail.

SECTION III

IRRIGATION SYSTEMS

DESIGN REQUIREMENTS FOR IRRIGATION SYSTEMS
All irrigation systems shall meet the following design requirements:

a. **Water Supply:** Untreated and reclaimed water supplies shall be clean and free of suspended particles, algae, or chemicals that may form insoluble precipitates in the equipment or may be detrimental to plantings.

b. **Runoff and Overspray:** All irrigation systems shall be designed to avoid runoff, seepage, low head drainage, overspray or other similar conditions onto adjacent property, non-irrigated areas, walks, roadways or structures. Systems benefiting from flushing shall accommodate the water generated by the flushing without erosion or disturbance to the planting. Water used for flushing shall be channeled into adjacent drainage structures (swales, gutter, etc.) where possible.

c. **Application Rate:** The water delivery rate of the irrigation system shall be taken into account the slope gradient and percolation rate of the soil in order to minimize runoff.

d. **Uniformity and Use:** The irrigation system shall deliver water efficiently and uniformly. Water used for irrigation shall be minimized to the amount needed to maintain adequate plant health and growth.

e. **Operation:** All irrigation systems shall be maintained in a fully operational condition.

f. **Backflow Prevention Units:** Approved backflow prevention units are required on all potable water irrigation systems. Installation shall comply with all applicable health and safety standards.

g. **Electrical Service:** Electrical service for the irrigation system controllers shall be indicated and referenced on the irrigation plans.

h. **Scheduling and Lateral Systems.**

1. Each lateral system shall be capable of meeting the minimum needs of the mature plant material during peak demands.

2. Lateral systems shall be divided by exposure (sun/shade, etc.), plant material (turf/shrub, etc.), differing plant water requirements (tropical/low water using, etc.), elevation, and by type of application equipment (drip, spray, etc.), to the degree that is both practical and feasible.

3. Spray system heads of different manufacturers or of different basis types (drip, bubbler, stream, low gallonage, standard, impact etc.) shall have consistent operating characteristics on any single lateral circuit.

4. Spray heads on the same lateral circuit shall be balanced for matched precipitation rates within 5 percent from the average for any different arcs of coverage or operating radii.

5. Separately controlled lateral systems shall be used when head or nozzle precipitation rate varies more than 15 percent from the average application in the area.

6. Specially designed adjustable nozzles shall be used for odd shaped areas, maintaining even application rates.

7. After plants are established, the irrigation system is to provide sufficient water to sustain plants in a healthy, growing condition.

8. All slopes greater than 10 percent shall have low precipitation rate heads installed.

i. **Design Pressures.**

1. The system design pressure and the recorded static pressure or hydraulic gradeline information (with the recording date) shall be indicated on the plans.

2. When the pressure reading is less than 40 psi, more than five years old, or is not available, the pressure shall be calculated from the hydraulic gradient (contact individual Water District Engineers) and the site elevation. The calculated pressure, meter elevation and hydraulic gradient shall be indicated on the plans.

3. When the actual measured or calculated minimum pressure is above 40 psi, irrigation systems shall include compensating design or equipment modifications.

j. **Pressure Constraints.**

1. Irrigation systems shall be designed to operate correctly at the lowest available operational pressure expected during the year and shall withstand water system surges.

2. Pressure loss within lateral piping circuits shall not exceed 20 percent of the designed operating pressure of the equipment on that circuit.

3. Pressure regulating devices shall be installed on any systems with a static inlet pressure at the point of connection greater than 80 psi unless specifically approved by the Planning Department. Pressure shall be regulated to a pressure adequate to operate the equipment at designed pressures with all incidental and line losses included. Where the pressure within the system exceeds 80 psi (due to elevation drops, etc.) a pressure reducing valve shall be used to reduce pressure to designed levels.

k. **Velocity Constraints:** Irrigation system piping shall be sized such that velocities remain below 5 feet per second for metal piping and 6 feet per second for PVC piping.

l. **Coverage:** Spray heads in shrub/groundcover areas shall be spaced at no greater than 60 percent maximum of rated diameter coverage. Spray heads in turf areas and all stream, strip or square spray type heads shall be spaced at no greater than 50 percent maximum of the rated diameter of coverage.

m. **Equipment Protection:** Any irrigation equipment located within 12 inches of pedestrian and vehicular use areas shall be located entirely below grade, including the use of pop-up type heads, or otherwise adequately protected from potential damage. Pop-ups heads shall be installed with swing joints or other flexible assembly. Swing joints shall be installed in lines at all abrupt changes of grade.

n. **Broken or Malfunctioning Equipment:** Broken or malfunctioning equipment and material shall be repaired or replaced immediately with equipment and material of the same type and operating characteristics as the original.

o. **Control Systems.**

1. Automatic control systems are required, and must be able to accommodate all aspects of the design, including multiple schedules, repeat cycles, and moisture sensing and rain sensing override devices. Control mechanisms for moisture-sensing systems shall be accommodated within the controller enclosure. All control circuits shall be designed to operate one valve at a time unless otherwise approved by the Director of Planning and Land Use.

2. Controller units shall be enclosed in secure, weather and vandal resistant, locking housings manufactured expressly for that purpose or located within a structure.

3. All irrigation systems shall be adjusted seasonally and as weather and plant conditions warrant.

4. All control systems shall include rain sensing override devices acceptable to the Director of Planning and Land Use and installed per manufacturer's recommendations.

p. **Valves.**

1. Shutoff Valves: Globe or ball valves shall be provided at points of connection and loop or zone isolation points to divide the irrigation system into controllable units, and to avoid draining long runs of piping for system repairs. For manifold remote control valves, the globe or ball valve shall be equal to or larger than the size of the largest control valve in the manifold.

2. Remote Control Valves: Control valves shall be manifolded when the main line is greater than two inches in diameter and installed in individual valve boxes. Valves shall be of slow closing design, and automatically close in the event of power failure. Valves shall be sized to provide adequate pressure differential for proper operation.

3. Quick Coupling Valves/Hose Bibs: Quick coupler valves or hose bibs shall be spaced at 100 foot intervals, maximum, and as needed to logically service areas. Quick coupling valves located with valve manifolds shall be separate and up stream of the manifold shutoff valve.

4. Special Valves: Anti-drain valves shall be installed on all spray heads without integral check valves on any areas where the cross-slope gradient of the lateral system exceeds 5 feet. If any portion of the lateral system

requires anti-drain valves, the lateral system shall be designed to maintain consistent operating pressures. Spring loaded check valves shall be installed on lateral systems with a separation grade of 10 feet or greater. Excess flow shutoff valves shall be installed with all irrigation spray heads located at tops of slopes.

q. **Piping:** All piping shall be as per the following chart:

ACCEPTABLE PIPE MATERIALS				
LOCATION	USE	MATERIAL	TYPE	NOTES
Below grade	Pressure Mains	Copper	Type "L"	Any Size
		PVC	Class 315	≥ 2"
		PVC	Sch 40	< 1½"
		Red Brass	Sch 50	Threaded
	Lateral Lines	Copper	Type "L"	
		Galvanized Steel	Sch 40	Any Size
		Polyethylene	UV-Resistant	Drip Systems
		Flexible PVC	Algae Resistant	Drip Systems
		PVC	Class 315	½"
		PVC	Class 200	≥ ¾"
		PVC	Sch 40	Any Size
	Fittings	Cast Iron	Class 250	Short Body
		Copper	Type "L"	Any Size
		Galvanized Steel	Sch 40	Threaded
		Nylon or ABS	Specialty	Drip Systems
		PVC	Sch 40	Any Size
		Red Brass	Sch 40	Threaded
Above grade	Pressure Mains	Copper	Type "L"	Any Size
		Galvanized Steel	Sch 40	Threaded
		Red Brass	Sch 40	Threaded
	Lateral Lines	Copper	Type "L"	Any Size
		Galvanized Steel	Sch 40	Threaded
		Polyethylene	UV-Resistant	Drip Systems and Mulch Required
		Flexible PVC	Algae Resistant	Drip Systems and Mulch Required
		PVC	Sch 40	< 2"
		PVC	UVR-Sch 409	Any Size
	Fittings	Copper	Type "L"	Any Size
		Galvanized Steel	Sch 40	Threaded
		Moulded Plastic	UV Resistant	Drip Systems
		PVC	Sch 40	W/Flex PVC pipe
		PVC	Sch 40	Any Size*
		PVC	UVR-Sch 40	Any Size
		Red Brass	Sch 40	Threaded

NOTE: When dissimilar metals are connected together, dielectric fittings are required.
*Temporary systems only

r. **Trench Widths:** Trenches for irrigation pressure lines shall be excavated wide enough to allow a minimum of 8 inches between parallel pipe lines, 8 inches from lines of other trades. Lines shall not be installed parallel and directly over one another. At least three inches of vertical clearance shall be maintained between crossing irrigation lines; and the minimum transverse angle shall be 45 degrees.

s. **Trench Depths:** The following trench depths shall be observed:

TRENCH DEPTHS						
LINE TYPE	LOCATION	SIZE	DEPTH (min.)	ZONE Com	Ind	Res
Pressure main	Within landscape	< 3" I.D.	18"	-	-	-
		≥ 3" I.D.	24"	-	-	-
		≥ 4" I.D.	30"	-	-	-
	Under vehicular paving	< 3" I.D.	30"	-	-	-
		< 3" I.D.	36"	-	-	-
		≥ 3" I.D.	36"	-	-	-
Non-pressure lateral	Within landscape	< 3" I.D.	12"	-	-	-
		≥ 3" I.D.	18"	-	-	-
	Under vehicular paving	< 3" I.D.	24"	-	-	-
		< 3" I.D.	30"	-	-	-
		≥ 3" I.D.	30"	-	-	-

t. **Sleeving:** All pipe and wire under vehicular paving shall be installed in PVC schedule 40 sleeves. Sleeves shall be at least twice the diameter of the pipe or wire bundle to be enclosed, with a minimum two inch size. Sleeving locations shall be marked at each end at the time of installation with a painted spot on the back face of the curb or other similar marking.

u. **Backfill:** Backfill material shall be clean and free of debris, large rocks, and objects with sharp edges. Finish grade of all trenches must conform to adjacent grades without dips, sunken areas, humps or other irregularities.

ON-GRADE IRRIGATION SYSTEMS

a. On-grade piping is unsightly and subject to breakage, and therefore shall be used only with the approval of the Director of Planning and Land Use.

b. On-grade piping shall not be allowed adjacent to pedestrian traffic.

c. All on-grade lines shall be secured to slopes every ten feet or less. The ends of all laterals shall also be staked.

DRIP IRRIGATION SYSTEMS

a. All components shall be of non-corrosive materials.

b. Separate or multiple outlet emitters shall be of self-flushing, pressure compensating design.

c. The design of drip systems shall provide balanced water supplies to plant materials of different sizes irrigated with a common lateral line.

d. All drip systems shall be adequately filtered and regulated per the manufacturer's recommended design parameters.

e. All systems shall be capable of flushing out accumulated particulate matter. Design shall provide a means for flushing with a minimum of erosion or disruption to the surrounding landscape. Water from flushing shall be channeled into adjacent drainage structures (swale, gutter, etc.) where possible.

f. Systems shall be designed for the mature size of plant material to be irrigated, including the eventual rooting pattern of the planting. A minimum of 50 percent of the root structure of the plant material shall be irrigated at all stages of growth, up to and including full mature size. All necessary equipment for mature plant size irrigation shall be installed initially. Future outlets for tubing shall be capped or otherwise sealed until needed.

g. Emitters shall be protected from soil or root incursion and easily accessible. Metal studs may be required at underground emitters if necessary for easy location with a metal detector.

SPECIAL IRRIGATION SYSTEMS

Special systems shall be allowed at the discretion of the Director of Planning and Land Use.

SECTION IV

PROJECTS INCLUDING WATER FEATURES

LANDSCAPING REQUIREMENTS FOR PROJECTS INCLUDING WATER FEATURES

Projects including major or minor water features shall meet the following additional landscape standards:

a. The surface area of major water features shall be limited to 15 percent of the total landscaped area and shall be counted as passive turf area, unless the source of water is reclaimed water or surface runoff.

b. The project shall use alternative sources of water for its water feature (other than imported) unless no other source is available. If groundwater resources are proposed to be used, long-term availability of this resource and the water quality must be approved to the satisfaction of the Director of Planning and Land Use.

SECTION V

DEFINITIONS

The following definitions which are contained in The Zoning Ordinance are repeated in this Water Conservation and Landscape Design Manual for convenience of the user:

Common Area: That area which will be maintained by a homeowners association, County service area, or other form of cooperative organization. For purposes of these regulations, "common area" does not include open space which cannot legally be disturbed.

Decorative Turf: Turf used for purely ornamental purposes having no use other than aesthetics.

Drought-resistant Plant Materials: Trees, shrubs, groundcovers, and other vegetation capable of sustained growth or reproduction with only natural moisture, and without any other irrigation or watering.

Grass, Cool Season: Species of turf grass best adapted to growth during cool, moist periods of the year, commonly having temperature optimums of 15 to 24 degrees centigrade; e.g., bent grasses, blue grasses, fescues, and rye grasses.

Grass, Warm Season: Species of turf grass best adapted to growth during the warmer part of the year; usually dormant during cold weather; commonly having temperature optimums of 27 to 35 degrees centigrade, e.g., bermuda grass, St. Augustine grass, and zoysia grass.

Groundcover: A planting of low plants, either herbaceous or woody, that cover the ground.

Hardscape: Patterned paving material (i.e., tile or mortared pavers, wood timbers, colored patterned concrete, providing a tile, brick or stone appearance), or an integral continuation of patterned paving material with enhanced concrete such as exposed aggregate, colored or salt finish.

Low-water Consuming Plant Materials: (See Plants, Low Water Use)

Native or Naturalizing Plant Species: Plant species native to the region or introduced which once established are capable of sustaining growth and reproduction under local climatic conditions, without supplemental watering.

Plants, High Water Use: Trees, shrubs, groundcovers, and other vegetation requiring supplemental irrigation to sustain both growth and reproduction once fully established (usually 2-5 years after planting).

Plants, Low Water Use: Trees, shrubs, groundcovers, and other vegetation capable of sustained growth and reproduction with minimum amounts of supplemental irrigation once fully established (usually 2-5 years after planting).

Shrub: A woody perennial plant generally with multiple basal stems.

Tree: A perennial woody plant with one or more well defined stems or trunks which, at maturity, is largely kept clear of leaves and branches at least five feet above grade.

Transitional Landscapes: Areas used to buffer a development or disturbed area from a natural or undisturbed area (such as firebreaks, fuel modification areas, etc.).

Turf: Upper layer of soil bound by grass and plant roots into a thick mat.

Turf Area, Active: Area of turf directly or actively used for recreational purposes such as ball fields or active play park areas, or passive play areas.

Turf Area, Passive: Area of turf not directly or actively used for active recreational uses.

Water Feature, Major: Lake, stream, fountain or pond greater than to 1,000 square feet in surface area.

Water Feature, Minor: Lake, stream, fountain or pond less than 1,000 square feet in surface area.

APPENDIX

A. Sections 67 through 6749 of the San Diego County Zoning Ordinance (Relating to Fencing and Landscaping Regulations).

B. Borrego Valley Exemption Area Map

C. Landscape Water Management Plan Information Packet

D. Suggested Plant List

APPENDIX A

RELATING TO WATER CONSERVATION FOR LANDSCAPING

AN ORDINANCE

The Board of Supervisors of the county of San Diego ordains as follows:

Section 1. Purpose and Intent.

The purpose of these regulations relating to the conservation of water for landscaping is to establish specific standards for landscaping design and installation so as to assure that available water resources are put to a reasonable beneficial use for all residents of the County. It is the intent that proposed measures for water conservation shall be reviewed as part of the processing of certain applications for building permits and certain discretionary permit applications for land development projects regulated in any manner by the provision of The Zoning Ordinance.

Section 2. The Board of Supervisors finds and determines that the following amendments will streamline and reduce the cost of the County landscape plan review procedure. The amendments made by this ordinance are intended to eliminate certain County plan check procedures for landscape plans prepared by licensed landscape architects and establish a landscape architect statement of compliance process for establishing that such plans comply with various ministerial County requirements. The ordinance amendments also clarify language in several sections of The Zoning Ordinance landscaping regulations.

Section 3. The following sections contained within the fencing and Landscaping Regulations of The Zoning Ordinance are hereby amended to read as follows:

FENCING AND LANDSCAPING REGULATIONS

6700 TITLE AND PURPOSE.
The provisions of Section 6700 through 6749, inclusive, shall be known as the Fencing and Landscaping Regulations. The purpose of these provisions is to prescribe standards for fences, walls, screening and landscaping within San Diego County for the conservation of valuable water resources and protection of property, the assurance of safety and security, the enhancement of privacy, the control of dust, and the

improvement of the visual environment including the provision of a neat appearance in keeping with neighborhood character.

6712 STANDARDS APPLICABLE TO REQUIRED LANDSCAPING.
All landscaping required by these regulations shall meet the following standards and the requirements set forth in a Water Conservation and Landscape Design Manual prepared by the Director and approved by the Board of Supervisors:

a. Materials for Landscaping. Landscaping shall include the planting and maintenance for some combination of trees, groundcover, shrubs, vines, flowers, or turf varieties with the plant materials consisting of native species and/or drought-resistant plant materials. Nothing in this ordinance shall be construed as to require or limit the amount of specific tree, shrub, vine, or groundcover species at any time. In addition, when appropriate for the site and intended use, the landscaping may include natural features such as rock and stone, non-drought-resistant plant materials, and structural features including but not limited to fountains, reflecting pools, art work, screens, walls and fences.

b. Timing and Maintenance. All required plantings shall be in place prior to use or occupancy of new buildings or structures. All required plantings shall be maintained in good growing condition, and whenever necessary, shall be replaced with similar plant materials to ensure continued compliance with applicable landscaping, buffering, and screening requirements. All landscaping shall be properly maintained and irrigation systems shall be maintained in good working order.

c. Prescribed Heights. When plant materials are used to satisfy screening requirements, planting shall be spaced to ensure 100 percent screening within two years of installation. All plant materials will be spaced according to acknowledged characteristics of the plants' growth.

d. Water Conservation and Landscape Design Manual. The design, dimensions, preparation, construction, piping specifications, planting, and irrigation of landscaped spaces, and/or hardscape spaces shall conform to the requirements of the Water Conservation and Landscape Design Manual. The Director may administratively waive or modify one or more such requirements when practical difficulties make their strict application infeasible, and upon a determination that the waiver or modification is consistent with the purpose and intent of the Water conservation and Landscape Design Manual and this section. In case of conflict between the landscaping requirements of the Off-Street Parking Design Manual and Water Conservation and Landscape Design Manual, the requirements of the Water Conservation and Landscape Design Manual shall prevail. The Director shall submit any amendments to the Water Conservation and Landscape Design

Manual to the Planning Commission for its review and comment prior to transmitting them to the Board of Supervisors.

6713 WHO MAY PREPARE REQUIRED LANDSCAPE ARCHITECTS

Where landscape plans, including planting, irrigation, and water management plans, are required by the County, they shall be prepared by a California licensed landscape architect, registered civil engineer, architect or landscape contractor to the extent that his or her license allows.

a. Plans prepared by Landscape Architects.

1. Landscape plans, other than concept plans, prepared by a California licensed landscape architect shall include a signed statement of compliance (on a plan sheets) by the landscape architect. It shall state that the plans conform to accepted landscape architectural standards of practice and that they comply with the most current version of the following:

   i. Zoning Ordinance landscaping requirements of Section 6712 et seq.;
   ii. San Diego County Building, Electrical, and Plumbing Codes;
   iii. San Diego County Landscape Water Conservation Design Manual, Applicant's Guide to Landscape Plans, and Landscape Water Management Plan Information Packet;
   iv. San Diego County Regional Standard Drawings for irrigation and landscaping (Chapters I and L), or equal; and the
   v. San Diego County Offstreet Parking Design Manual.

   Landscape plans having this signed statement of compliance will not be subject to plan check by the Department for the items listed in this subsection. The required compliance statement is as follows:

   > "I find that this sheet conforms to accepted landscape architectural standards of practice and is in compliance with the requirements listed in Section 6713a.1. (i. through v.) of the San Diego County Zoning Ordinance."

   Notwithstanding the previous paragraph, the Department may monitor the adequacy of landscape plans and require corrections if needed. An hourly review fee may be imposed for County work rendered relating to necessary corrections on these items pursuant to San Diego County Administrative Code Section 362 (the Fee Ordinance).

2. Landscape plans prepared by a licensed landscape architect shall be submitted for a limited plan check by the Department if any of the following types of requirements relating to landscaping are applicable to said plans:

   i. Discretionary permit and/or subdivision map conditions or design requirements (including concept landscape plans);
   ii. California Environmental Quality Act mitigation measures;
   iii. San Diego County Community Design Guidelines; and
   iv. San Diego County Code, Excavation and Grading, planting and irrigation requirements (portion of Title 8, Division 7, Chapter 4).

   An hourly review fee (pursuant to the Fee Ordinance) will be collected for this limited plan check.

b. Plans prepared by Civil Engineers, Architects or Landscape Contractors. Landscape plans prepared by a civil engineer, architect or landscape contractor (to the extent that their license allows) shall be submitted for plan check by the Department with the required plan check fee.

c. Noncompliance by Licensed Landscape Architects. A public record may be maintained by the Department of licensed landscape architects whose landscape plans fail to comply with the requirements of subsection a.1. above. Placement on the public record shall be for a period of 5 years. Landscape plans submitted by landscape architects listed on the record shall be required to undergo a complete plan check by the Department pursuant to subsection b. above.

   Landscape architects being considered for placement on this public record shall be notified in writing of the alleged noncompliance with the requirements of subsection a.1. The landscape architect shall be given an opportunity to provide a written explanation of the alleged noncompliance to, and to meet with, the Director prior to a decision being made on whether to place the landscape architect on the public record. The Director's decision may be appealed to the Planning Commission pursuant to the Administrative Appeal Procedure commencing at Section 7200. The Department may also file a compliant with the State Licensing Board if the landscape plans of a landscape architect fail to comply with the requirements of subsection a. above.

6715 WATER CONSERVATION REQUIREMENTS - APPLICABILITY

All building permit applications for industrial, commercial, civic, or multi-family residential buildings or structures; all model homes; single-family or multi-family residential developments with common areas; and all discretionary permit applications for the aforementioned types of land uses regulated in any manner by the provisions of this Zoning Ordinance shall be subject to the outdoor water conservation measures required by these regulations. These measures shall be incorporated into project landscape plans.

6717 APPLICATION PROCEDURE

Applications subject to these regulations shall comply with the following:

a. Landscape Concept Plan.

1. If required by the Director of Planning and Land Use, a landscape concept plan shall be submitted to the Department at the time of project application. Landscape concept plans shall include the representation of site features, proposed plantings and the proposed method and type of irrigation. A concept plan is a generalized notion as to how the goal of water conservation will be attained. Concept plans are acceptable only for projects which are discretionary. The need for a landscape concept plan shall be determined by the Director of Planning and Land Use, or by the appropriate hearing body. Detailed landscape and irrigation plans will also be required at a later date.

2. For ministerial projects, or for discretionary projects which have been determined by the Director of Planning and Land Use not to require landscape concept plans, a concept plan may be provided to the Department for review and approval at the option of the applicant.

b. Landscape Plans.

1. All landscape plan applications shall include a plot plan, planting plan, irrigation plan, water management plan, details, specifications, notes, legends and water requirement schedule necessary for a complete landscape plan review in accordance with County standards.

2. Planting plans shall include, but not be limited to, all existing plant material to be retained (called out by caliper size), a legend listing the common and botanical plant names and total quantities by container size and species, location and spacing of all plants, seed mixes with application rates and relevant germination specifications.

3. Irrigation plans shall be separate from the planting plan and shall be concise and accurate.

4. A fee, to cover all costs associated with these regulations, as referenced in Section 7602 shall accompany all building permit applications or discretionary permit applications which are submitted to comply with these water conservation requirements.

c. Water Management Plans for Landscape Plans.

1. A Water Management Plan shall be submitted pursuant to Section 6715. The Water Management Plan shall address water management procedures and equipment and their application to plant materials and seasonal use. The owner or the owner's agent shall be responsible for implementation of the Water Management Plan. A Water Management Plan shall consist of the following elements: Statement of Site Conditions; Water Requirements; Water Delivery Systems; and, Summary of Water Conservation Methods and Water Savings. The detailed requirements of a Water Management Plan are contained within the Water Conservation and Landscape Design Manual.

2. For all applications for model homes, the Water Management Plan shall indicate the nature of public information documents placed at each model home describing water conservation principles used in the landscaping of said model home. A sign shall be required to be placed at each model home indicating the use of water conservation landscaping and the Water Management Plan shall indicate the size and location of the sign.

3. When reclaimed water is available within the basin containing the project site or when a reclamation master plan indicating the availability of reclaimed water in the future has been adopted by either the County or a special district which governs the territory of the proposed project, the applicant shall incorporated the use of reclaimed water into the project design except in the vicinity of any location where food is served or consumed. In this case, the original project shall provide for a dual distribution system for all landscaped areas.

4. In the event of a declared water shortage, or mandatory or voluntary water conservation measure, the project shall comply with all water allocation programs adopted by state and local government authorities. In the event of any conflict between such programs and these regulations, the stricter conditions shall apply.

d. Statement of Installation Compliance Prior to Occupancy.

1. Prior to the issuance of a certificate of occupancy, or notice of completion, whichever is applicable, the applicant shall provide a statement of compliance by the preparer of the approved landscape plans that the landscape improvements have been installed in accordance with the approved landscape plan. Periodic inspections may be conducted by the Department to verify conformance and corrections may be required if needed.

2. The preparer of the landscape plans shall provide evidence of a laboratory soils analysis and that the recommendations were taken into consideration in the amendment, fertilization and drainage specifications.

3. Any changes that occur in the field due to site conditions or plant material availability must be submitted to the Director of Planning and Land Use prior to occupancy of the structure. Any change which would affect more than 10 percent of the landscape plan requires resubmittal of the landscape plan for review and approval (pursuant to Section 6713). All changes must be in compliance with County regulations and standards.

4. Installed landscaping found not to comply with approved landscape plans is subject to correction. Under such circumstances, the Department may require submittal and plan check of landscape plans and the payment of applicable review fees.

6719 WAIVER OF WATER CONSERVATION REQUIREMENTS

A. General

The Director or a designated representative may administratively waive or modify one or more such requirements when practical difficulties make their strict application infeasible, and upon a finding that the waiver or modification is consistent with the purpose and intent of the Water Conservation and Landscape Design Manual and this section. Application of all or part of these water conservation requirements may also be waived by the Director or a designated representative if it is determined that the nature of a proposed project is such that subjecting it to compliance with all such requirements would not materially contribute to the objectives of water conservation.

B. Waiver Application Procedure.

Applications for waiver shall be submitted to the Department of Planning and Land Use. All applications for waiver shall include the following information:

a. Name of applicant
b. Address or location of site, including Assessors Parcel Number.
c. Calculation of the total area of the site to be landscaped.
d. A minimum of eight photographs of the site consisting of four photos looking into the property and four looking out from the property from each cardinal direction.
e. An explanation of the reason for the waiver request.

6721 EXEMPTION

A. Interior remodels or minor modifications to the exterior of a structure are not subject to this ordinance.

B. Minimum Landscaping Area.

All projects with a total landscaped area of 1,000 square feet or less shall be exempt from the requirements of The Zoning Ordinance related to water conservation unless a condition of discretionary approval requires a landscape plan.

C. Borrego Valley Exemption Area

All projects located within Borrego Valley as shown on the map entitled "Borrego Valley Exemption Area" on file with the Clerk of the Board of Supervisors as Document No. 74855A are exempt from the requirements of this ordinance except when the project (1) includes a water intensive use as defined in the County Groundwater Ordinance, or (2) consists of a total project are of 100 acres or more.

6723 CONFLICT WITH CALIFORNIA PUBLIC RESOURCES CODE

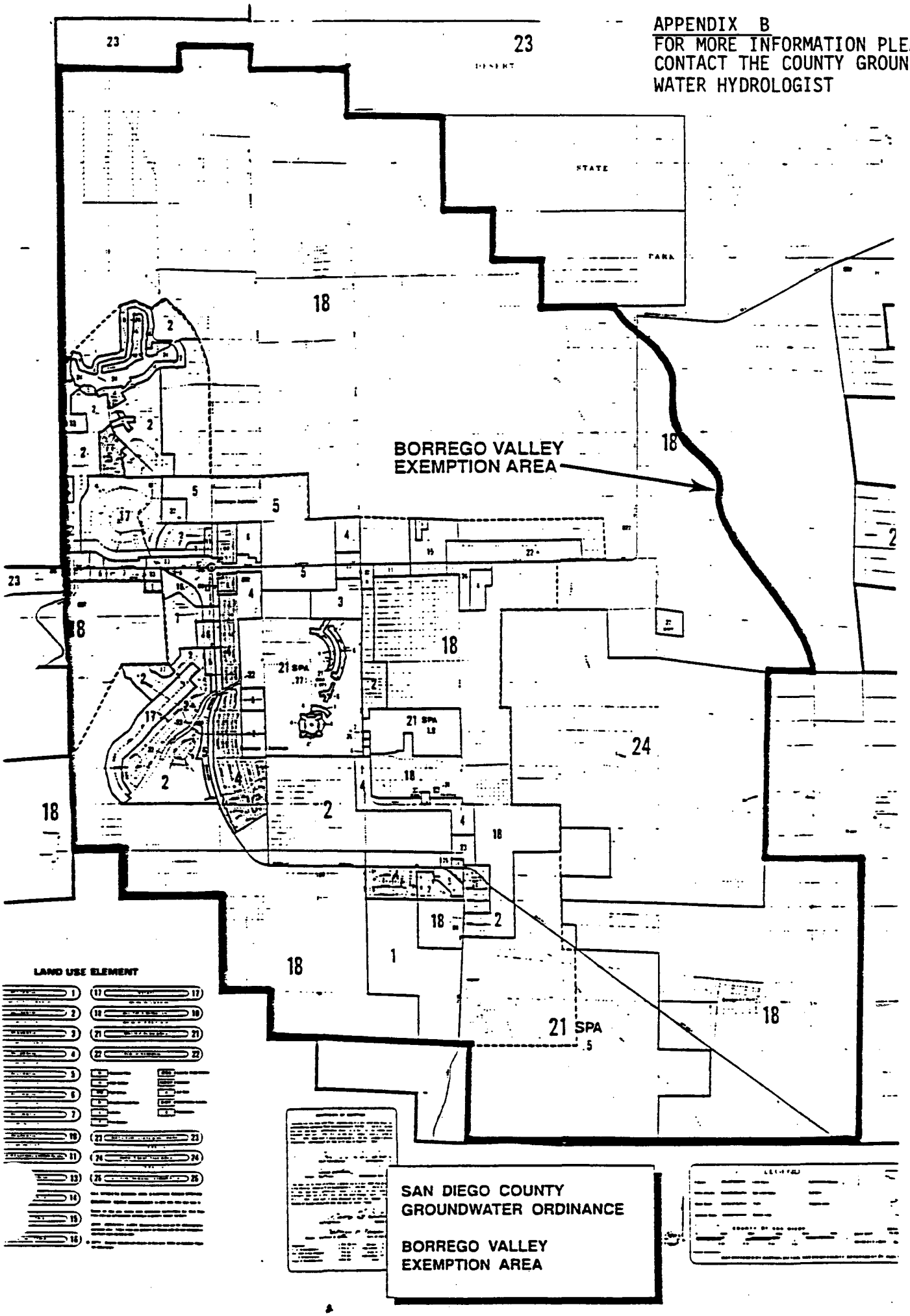
It is recognized that the California Public Resources Code establishes certain minimum requirements for brush clearance and also grants local governing agencies authority to promulgate and enforce additional fire code requirements as necessitated by local conditions. Consequently, when any conflict arises between these water conservation regulations and local fire agency regulations, those of the local fire agency shall prevail.

6725 APPEAL PROCEDURE

A decision by the Director relating to the interpretation or application of these water conservation requirements to specific projects may be appealed as provided in the Administrative Appeal Procedure commencing at Section 7200.

APPENDIX B

APPENDIX B
FOR MORE INFORMATION PLEASE CONTACT THE COUNTY GROUND WATER HYDROLOGIST



APPENDIX C

GARY L. PRYOR
DIRECTOR
(619) 694-2962

County of San Diego

SAN MARCOS OFFICE
338 VIA VERA CRUZ - SUITE 201
SAN MARCOS, CA 92069-2620
(760) 471-0730

EL CAJON OFFICE
200 EAST MAIN ST. - SIXTH FLOOR
EL CAJON, CA 92020-3912
(619) 441-4030

DEPARTMENT OF PLANNING AND LAND USE

5201 RUFFIN ROAD, SUITE B, SAN DIEGO, CALIFORNIA 92123-1666
INFORMATION (619) 694-2960

TO: All Interested Parties

FROM: Department of Planning and Land Use
Landscape Architects

RE: LANDSCAPE WATER MANAGEMENT PLAN INFORMATION PACKET

The attached packet of information is provided as a supplement to the Landscape Water Conservation Design Manual. It is provided for your assistance in preparing Landscape Water Management Plans.

The packet includes the following items.

1. Applicants Guide to Landscape Plans.
2. Landscape Water Requirements Work Sheet, Parts 1 and 2.
3. Reference Evapotranspiration (Eto) tables from local C.I.M.I.S. stations.
4. Sample Landscape Water Management Plan.

Items 2 and 3 are provided as reference information for completing the "Water Requirements" section of your Landscape Water Management Plan.

Item 2 consists of two worksheets to be filled out and returned with your Water Management Plan. Part 1 is a worksheet for your site water use totals. Only one (Part 1) worksheet is required. Part 2 is a worksheet for determining the water needs of each hydrozone. Please provide one worksheet for each hydrozone.

Item 4 is a sample Water Management Plan prepared by the County of San Diego, Department of Planning and Land Use Landscape Architects. It has been prepared to provide assistance, and may be used as a guideline for preparing your plan.

If you have any further questions, please contact Dave Strickland at (619) 694-3735 or Jane Badger at (619) 694-2964.

DS:jcr

Enclosure

WMPAKET.CO2 Revised 5/7/93; 12/7/98

COUNTY OF SAN DIEGO • DEPARTMENT OF PLANNING AND LAND USE

LANDSCAPE PLANS
APPLICANT'S GUIDE

NOTE TO THE PUBLIC: Please use this check list to determine whether your landscape plan is complete before you submit it for review. Unacceptable or incomplete applications will result in delays of your project.

PART I : Materials to be submitted to the Zoning Counter.

a. A completed and signed application form DPLU #346.

b. Two copies of the landscape plan, irrigation plan, water management plan and any other required plan specified in the Notice of Decision or conditions of approval of the discretionary permit which is requiring the landscape plan. (A Landscape Plan includes irrigation, specifications, details and a water management plan.) The landscape plan must match the existing County approved map or plot plan and address all conditions relating to landscaping contained in the permit and the landscape water conservation ordinance.

c. Water Management Plan.

d. Applicable Fees.

PART II : General requirements.

a. The landscape plan must be legible, professionally prepared and be a print of an original drawing. No Xerox copies or Xerox reductions.

b. Size: Must be standard 24" X 36" blueprint sheets . **Any other size is not acceptable.**

c. Scale: 1" = 20' or smaller (such as; 1" = 10', 1" = 5').

d. The plans must show both plants and irrigation for all areas that are required to be landscaped.

PART III : Additional requirements.

a. When submitting a landscape plan, please reference the County case number (TM, MUP, STP, EAD, etc.) of the discretionary permit requiring the landscape plan. **Applications will not be accepted without a reference to this number.**

b. The County requires the use of drought tolerant plants for most areas of the project. A suggested plant list of drought tolerant species is available from the Planning Department's cashier.

c. A fee and deposit is collected at the time of intake. For current information, please see the "Summary of Filing Fees and Deposits" available from the Zoning Counter. Checks are made payable to the County of San Diego.

d. Plans must meet the requirements of the County of San Diego, Landscape Water Conservation Ordinance and Design Manual. Copies are available at the Planning Department's cashier.

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PART IV : Landscape Plan.

In preparing your landscape plan, you must meet the requirements placed on your project by the County. It is advisable, sometimes, to have a pre-application meeting to discuss the conditions of your particular project. Please contact the Zoning Counter regarding pre-application appointments. A per hour fee is charged for this service. Plantings that ultimately may interfere with overhead utilities or cast shade on solar panels or block views of traffic are inappropriate while the provision of safe, easy pedestrian and bicycle access to the project is very appropriate.

The following items must be included in your landscape plan:

a. Location, name, size and quantity of all plants.

b. Soil amending, planting instructions, soils analysis report with appropriate actions, and mulches applied to all bare soil areas of 2" or more.

c. All buildings, property lines, paving, fences, walls and above ground utilities.

d. A finish grading note such as: "All landscape areas shall be finish graded to remove rocks and to insure surface drainage away from buildings."

e. Provide details, specifications, guarantees and necessary notes on all planting plans. Details of walls, fences, lighting and paving may be required.

f. All decorative turf shall not exceed 15% of the total landscape area.

g. Designed in accordance with the County's landscape conservation ordinance.

PART V : Irrigation Plan.

You must provide irrigation for all landscaping that is required by the County. A complete irrigation system, built to County and professional standards, is required on most projects. A complete irrigation plan must show the following items:

a. Use of water conserving irrigation systems for all projects.

b. Water meter location, size and available pressure.

c. A backflow prevention device per the Uniform Plumbing Code (include make and model number).

d. Location. depth, size and type of pressure and lateral lines. Use of sleeves for pipes under driveways and paved surfaces.

e. Location, size and type of valves and sprinklers (give make and model number in an irrigation legend).

f. Show details, such as water filters and pressure regulators on any drip irrigation systems.

g. Avoid sprinkler risers in corners, along walls and parking areas.

h. Use check valves/anti-drain valves on slopes where needed.

i. Include an overspray note such as: "Field adjust all sprinklers to eliminate overspray onto sidewalks or drives."

j. Provide details/specifications and guarantees on all irrigation plans.

k. Provide a water management plan.

l. Drip irrigation for appropriate areas is highly encouraged.

PART VI : WATER CONSERVATION ORDINANCE

All plans must satisfy the requirements of the Landscape Water Conservation Ordinance, and include a water management plan. Please refer to the Ordinance and Design Manual. A letter of certification by the project's Landscape Architect stating that the landscaping has been installed in accordance with the approved plans must be provided to the County prior to final occupancy of any structure. The letter should be submitted to the Building Inspector and a copy sent to the County Landscape Architect. Spot inspections of property will be made by County staff to determine compliance with all aspects of the approved plans. Any plan changes in excess of 10% will require a new landscape plan to be submitted along with a new fee/deposit. Changes less than 10% may be approved administratively. Please discuss any anticipated modifications with the County Landscape Architect prior to filing with the Department.

PART VII : LANDSCAPE PLAN SUBMITTAL REQUIREMENTS AND PROCESSING TIME

For landscape plans to be submitted for review the following items must be a part of the submittal package;

1. Landscape plan including details and specifications.
2. Irrigation plan including details and specifications.
3. Water Management Plan.

NOTE: An application will not be accepted without the above plans.

PROCESSING TIME:

First Check: The first plan check turn around is three weeks from the date of submittal.

Please return the plans to the Zoning Counter with a copy of the plan check letter. Plans without this letter will not be accepted.

Second Check: The second plan check turn around is one week after resubmittal.

Third Check: The third plan check turn around is one week after resubmittal.

NOTE: If the landscape and irrigation plans are not acceptable after the third plan check, a new fee and submittal will be required to continue the plan check.

If you have any questions, please contact Dave Strickland at 694-3735 or Jane Badger at 694-2964.

COUNTY OF SAN DIEGO, DEPARTMENT OF PLANNING AND LAND USE

LANDSCAPE WATER REQUIREMENTS WORK SHEET: PART 1

(SITE TOTALS)

PROJECT NAME:_____ COUNTY PROJECT# _____

PROJECT ADDRESS:_____ APN: _____

_____ WATER DISTRICT:_____

SITE LANDSCAPE WATER USE TOTALS

The following is a summary of the total annual landscape water requirements for the site.

TOTAL GALLONS OF WATER REQUIRED:_____
(add gallons from each hydrozone)

TOTAL UNITS OF WATER REQUIRED: (1 unit = 748 gal.)_____
(total gallons / 748 = units of water)

ACRE FEET OF WATER REQUIRED:_____
(total gallons / 326,000 = acre ft.)

MAXIMUM APPLIED WATER ALLOWANCE CALCULATION

The following is a calculation of the Maximum Applied Landscape Water Allowance on site. This calculation is for comparison purposes only. It assumes the entire landscape area is planted in cool season turf with a crop coefficient (Kc) of 0.8, and utilizes a spray system with a Distribution Uniformity (DU) of 0.65 (65%).

TOTAL LANDSCAPE AREA (in square feet):_____

MAXIMUM APPLIED WATER ALLOWANCE IN INCHES. = $\frac{\text{ETo}(\quad) \times 0.8}{0.65}$ = ( )

MAXIMUM USE GALLONS OF WATER = inches( ) X Landscape Area X (0.623) = ( )

MAXIMUM UNITS OF WATER = Total Gallons / 748 = ( )

MAXIMUM ACRE FEET OF WATER = Total Gallons / 326,000 = ( )

PERCENT SAVINGS = $\frac{\text{Max.Allow. - Actual Use}}{\text{Maximum Allowance}} = \frac{(\quad)}{(\quad)} \times 100 =$ _____%

Note: This calculation may be made in gallons, units, or acre feet.

COUNTY OF SAN DIEGO, DEPARTMENT OF PLANNING AND LAND USE

LANDSCAPE WATER REQUIREMENTS WORK SHEET: PART 2

(HYDROZONE CALCULATIONS)

HYDROZONE DATA:

Hydrozone Number:_____ Crop Coefficient (Kc):_____

Hydrozone Area(Sq.ft.):_____ Dist. Uniformity (DU):_____

Hydrozone Plant Type:_____ Annual Refer. ET (ETo):_____
(turf, ornamental, native, etc)

Seasonal ETo:_____
winter, spring, summer, fall
(circle one)

HYDROZONE WATER USE CALCULATION:

FORMULA:

$\frac{ETo \times Kc}{DU}$ = Annual water needs in inches for specified hydrozone

CALCULATION:

$\frac{ETo(\quad) \times Kc(\quad)}{DU(\quad)}$ = ( ) inches of water per year for hydrozone.

GALLONS OF WATER FOR SPECIFIED HYDROZONE:

FORMULA:

Inches of water X Hydrozone area (in sq.ft.) X 0.623 (constant) = gallons of water per year for hydrozone.

CALCULATION:

Inches of water ( ) X Hydrozone area (in sq.ft.) ( ) X .623 = _____ (gallons)

NOTES:
- Use one, "Work Sheet: Part 2", for each hydrozone.
- "Part 2", can be used for annual or seasonal calculations.
- Seasonal calculations are optional.

WMPWKSHT.002 revised 4/7/94

TABLE 4.ETo TOTAL INCHES PER MONTH

LOCATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Chula Vista	2.20	2.65	3.42	3.78	4.88	4.72	5.49	4.88	4.49	3.42	2.36	1.95	44.24
Escondido	2.07	2.76	3.78	4.72	5.49	6.14	6.71	6.47	5.43	3.78	2.48	1.95	51.78
Fallbrook	2.07	2.65	3.78	4.72	5.49	6.14	6.84	6.47	5.43	3.78	2.48	1.95	51.8
Oceanside	2.20	2.65	3.42	3.78	4.86	4.72	4.88	5.13	4.13	3.30	2.36	1.95	43.4
Pine Valley	1.46	1.76	2.93	4.13	5.49	6.85	7.93	7.32	5.91	4.03	2.24	1.47	51.52
Ramona	2.07	2.54	3.91	4.72	5.49	6.50	7.32	6.96	5.55	3.91	2.60	1.71	53.28
San Diego	2.20	2.65	3.42	3.78	4.88	4.88	5.13	4.88	4.49	3.42	2.36	1.95	44.04
Santee	2.07	2.65	3.66	4.49	5.49	6.14	6.84	6.22	5.43	3.78	2.60	1.95	51.32
Warner Springs	1.59	2.20	3.66	4.72	5.74	7.56	8.30	7.69	6.26	4.03	2.48	1.47	55.7

Date interpreted and converted from ETo maps in the publication:

Pruitt, W.O., W.O., E. Fereres, K. Kaita, and R.L. Snyder. 1987. Reference evapotranspiration (ETo) for California. U.C. Bulletin 1992. 14pp + 12 plates.

COUNTY OF SAN DIEGO

SAMPLE
WATER MANAGEMENT PLAN

for:

HAPPY BURGER RESTAURANT
(a fictitious establishment)

date:
April 25, 1993

prepared by:

County of San Diego
Department of Planning and Land Use
Landscape Architects

prepared for:

General Public
To assist in the preparation of
Landscape Water Management Plans

TABLE OF CONTENTS

LANDSCAPE WATER MANAGEMENT PLAN

INTRODUCTION

This Landscape Water Management plan is for the Happy Burger restaurant located at 1000 Sweetwater Court, San Diego, California 91977, in the heart of Spring Valley. (See Figure 1: Site Location Map.)

The purpose of this water management plan is to assist landscape and irrigation maintenance personnel with irrigation scheduling and monitoring. The plan is based on historical evapotranspiration data and estimated crop coefficients for the selected plant species. Therefore, the irrigation manager should use this plan only as a guide when determining watering schedules.

The goals of this plan are to 1) conserve water in the landscape, and 2) maintain the landscaping according to acceptable aesthetic standards.

Plant water requirement calculations provided herein are based on historical climatic conditions, information regarding plant water need characteristics, and a pre-construction estimate of the distribution uniformity (efficiency) of the irrigation system.

Following installation, water audits of the spray irrigation systems are strongly recommended. An audit can provide more accurate data on the distribution uniformity of the system, thereby allowing for adjustments to the water application recommendations made in this plan.

Source information on plant water requirements is based mainly on the experience of those who have worked in the field, and on limited scientific data on actual plant water needs. (See Appendix A, "Bibliography".)

Successful water management for any project depends on good design, proper installation, and regular maintenance.

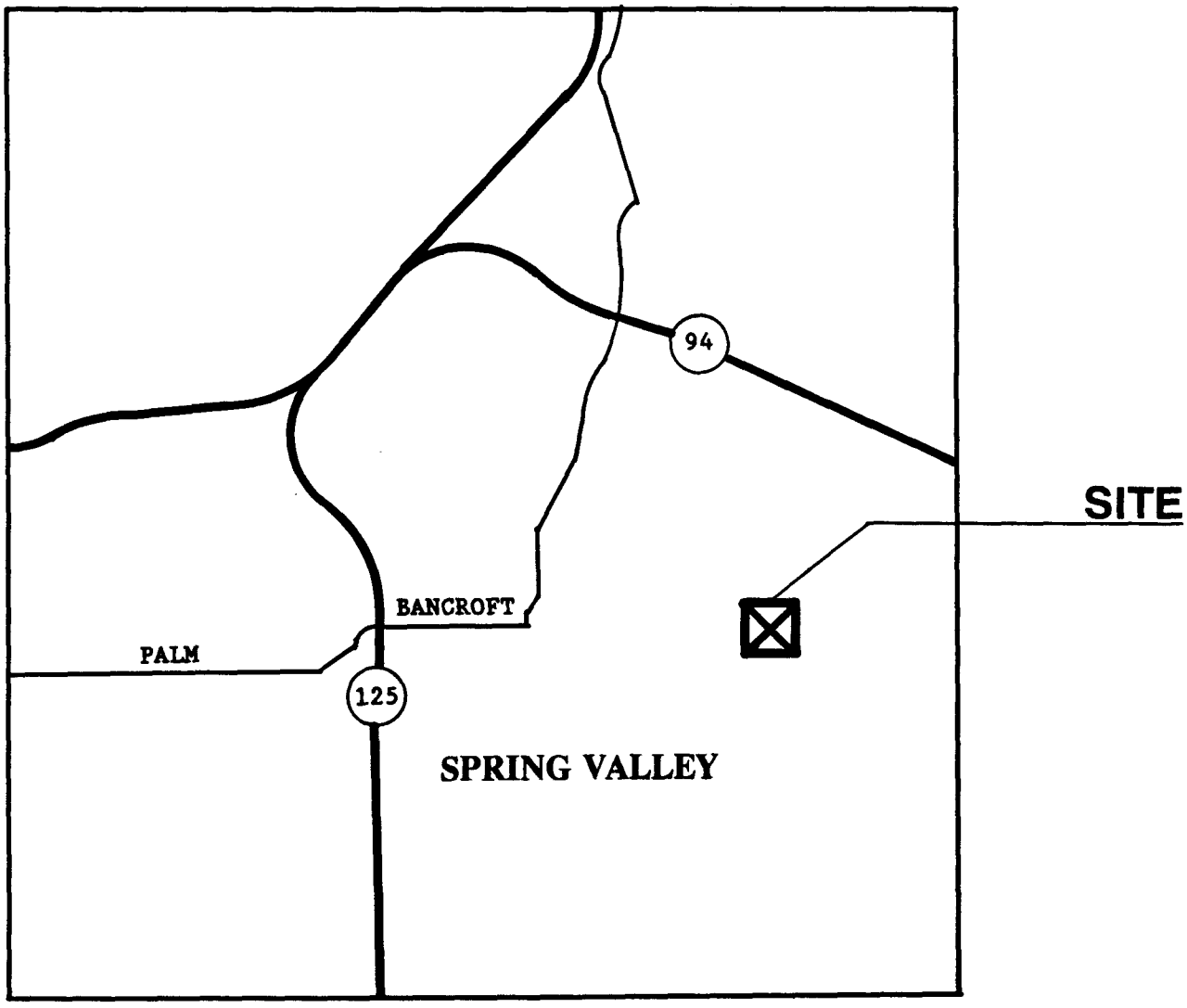


FIGURE 1

SITE LOCATION MAP

STATEMENT OF SITE CONDITIONS

DESCRIPTION OF THE SITE

The size of the site is approximately 1.1 acres. Approximately 21,298 square feet will be permanently landscaped and irrigated.

The site is characterized by level topography with the exception of the rear south-facing slope. The general condition of the site is a disturbed, previously graded lot. Existing structures will be demolished and a new building constructed.

Aspect, or the direction a slope is facing, is an important consideration for efficient water management. A south, southwest, or west facing slope will dry out considerably faster than a north, northeast, or east facing slope. The Happy Burger site has only one slope which is south facing.

Soils are an important consideration for their water holding capacities, and infiltration rates. Water will rapidly drain through a sandy soil, but may infiltrate a clay soil only at a rate of approximately one tenth of one inch per hour depending on specific site conditions.

Following the installation of the irrigation system an irrigation test of the spray systems should be performed to determine the infiltration rate of water into the soil. Make note of the length of time that the irrigation system must operate before water begins to flow over the surface of the soil. That length of time should become the maximum operating time for any single irrigation cycle for that circuit.

CLIMATIC CONDITIONS

The climate is mild in both summer and winter seasons. The site is located within climate zone 22 as defined by Sunset Western Garden Book. Winter low temperatures are seldom below 28 degrees. However, recorded winter lows range between 21 and 24 degrees. Frost damage may be expected in canyons and at canyon mouths due to cold air drainage.

ANNUAL PRECIPITATION

Total annual precipitation in the Spring Valley area is approximately twelve inches. (Source: County of San Diego Precipitation Map.) Effective, or usable, rainfall is therefore expected to be 3-6" (25-50% of total annual precipitation).

For the purpose of preparing this plan, effective rainfall will not be considered in the calculations. Rainfall is unpredictable.

A year with little or no rain may be detrimental to plants if expected rainfall is relied upon for irrigation scheduling.

Therefore, this plan assumes irrigation will be provided year round. During a rain event the irrigation system should be shut off. Any water savings realized due to precipitation will be considered bonus water conservation.

WATER SOURCE AND QUALITY

The water source for the Happy Burger site is potable water supplied by the Helix Water District. The anticipated available static pressure at the water meter connection is 127 psi.

Reclaimed water is not available at the site, and is not expected to be available in the near future.

ANTICIPATED EVAPOTRANSPIRATION

Anticipated evapotranspiration rates for the site are based on historical averages. This data is collected from C.I.M.I.S (California Irrigation Management Information System) weather stations around the county.

A C.I.M.I.S. weather station is not located in Spring Valley, therefore, the closest station, or the station located in an area most similar to Spring Valley will be used. For the purpose of preparing this plan, data from the C.I.M.I.S. station in Santee shall be used.

Monthly historical average reference evapotranspiration data is as follows:

Month	ETo	Month	ETo
January	2.07	July	6.84
February	2.65	August	6.22
March	3.66	September	5.43
April	4.49	October	3.78
May	5.49	November	2.60
June	6.14	December	1.95
		ANNUAL TOTAL ETo	51.32

As seen from the monthly ETo data above there is a significant variation in ETo throughout the year. To account for this variation, and to provide the most usable information to the Irrigation Manager, water requirements for the project will be calculated on a seasonal basis. With this in mind, the ETo data above needs to be divided into seasons based on similarity of monthly data.

Seasonal ETo categories are as follows:

Winter

Month	ETo
November	2.60
December	1.95
January	2.07
February	2.65
season total	**9.27**

Spring

Month	ETo
March	3.66
April	4.49
season total	**8.15**

Summer

Month	ETo
May	5.49
June	6.14
July	6.84
August	6.22
September	5.43
season total	**30.12**

Fall

Month	ETo
October	3.78
season total	**3.78**

WATER REQUIREMENTS

SITE HYDROZONES

Planting areas are classified into water use Hydrozones 1 through 5. Hydrozone 1 is the highest water use zone, and Hydrozone 5 is the lowest. The most visually prominent planting areas are those nearest the driveways and building entrances. Therefore, higher water use landscaping is used only in these areas. (See Figure 2: Hydrozone Map).

A hydrozone is a portion of the landscaped area having plants with similar water needs that are served by a valve or set of valves with the same schedule.

Hydrozone 1, at the project entry along the south property line, will be planted with cool season turf. This zone will be watered by a spray irrigation system.

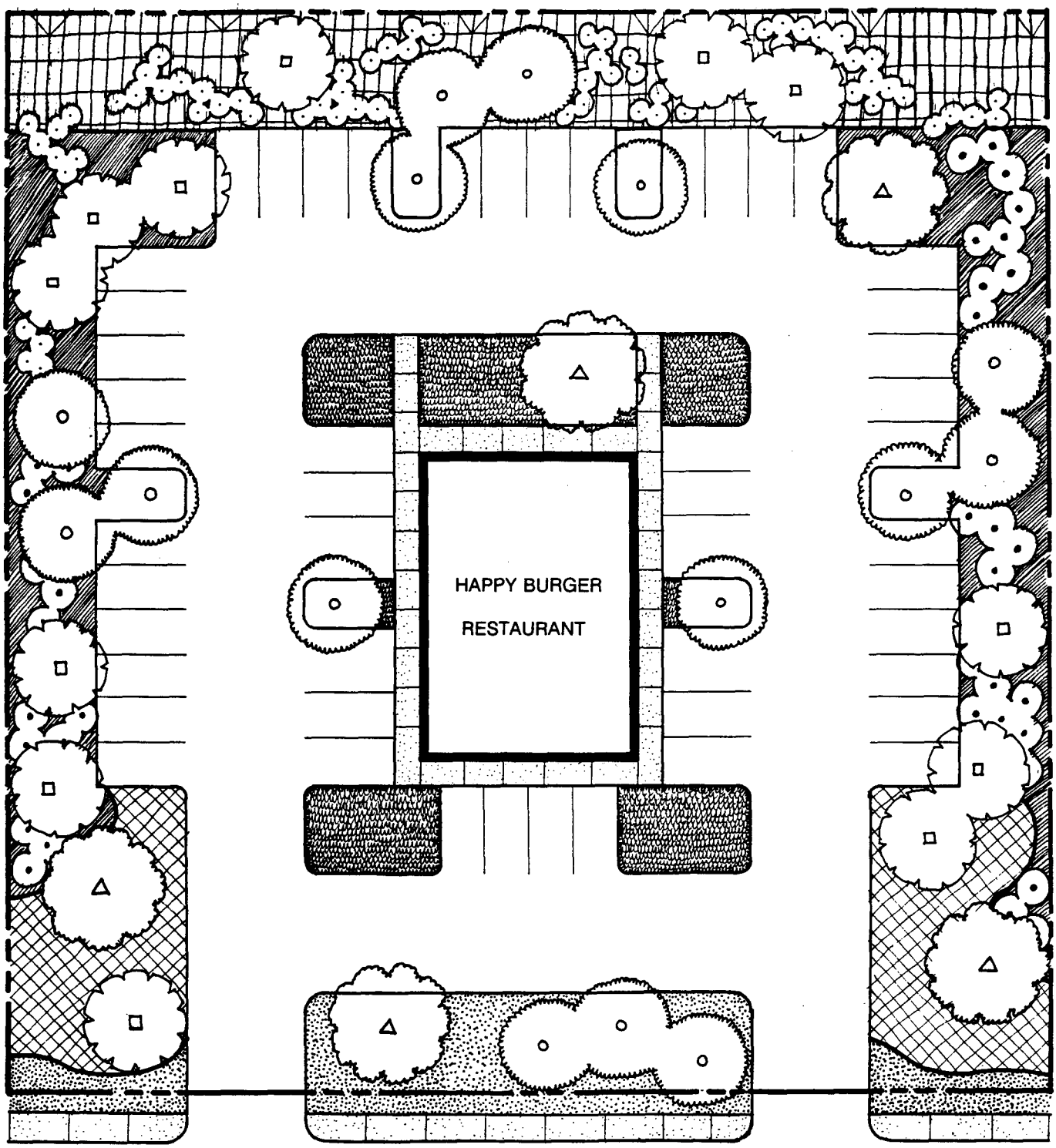
Hydrozone 2, the planting areas near the entry and along the east and west property lines, will be planted with ornamental perennial and herbaceous ground covers. This zone will be watered by a spray irrigation system.

Hydrozone 3, the planters surrounding the building will be planted with ornamental spreading shrubs, ornamental shrubs and trees. The planters will be mulched, and irrigated with a bubbler system. Mulching should reduce water needs by 10-20% over a typical planting bed without mulch.

Hydrozone 4, the east and west property line planters, will feature drought tolerant ornamental trees and shrubs in mulched beds. This zone will be watered by a drip irrigation system. (Note: either a drip system or bubbler system would be appropriate in this hydrozone.)

Hydrozone 5, the south-facing slope along the north property line, will be hydroseeded with a mix of native and naturalizing plant species. This zone will be watered by a spray irrigation system. Because this hydrozone is a south facing slope, it will probably require 10-15% more water than would be expected on a flat surface.

The irrigation manager should make careful observations of all the hydrozones to determine any needed adjustments in the watering schedule.



NORTH

NTS

HYDROZONE 1: COOL SEASON TURF

HYDROZONE 2: HERBACEOUS GROUNDCOVER

HYDROZONE 3: DROUGHT TOLERANT SHRUBS

HYDROZONE 4: TREES & SHRUBS IN MULCH BED

HYDROZONE 5: NATIVE/NATURALIZED PLANTING

FIGURE 2: HYDROZONE MAP

EXPLANATION OF WATER REQUIREMENTS CALCULATION

The following is a brief explanation of a method of calculating approximate landscape water needs following a normal plant establishment time period. This method is a simplification of that used in the State Model Water Efficient Landscape Ordinance.

Using historical monthly evapotranspiration data (C.I.M.I.S. data) provided in this report, calculations can be done on a monthly, seasonal, or annual basis for each hydrozone. This water management plan will provide seasonal calculations.

The formula is as follows:

$$\frac{ETo \times Kc}{DU} = \text{Water needs in inches for a specified landscape hydrozone.}$$

Where:

ETo = Reference Evapotranspiration. Reference ET is the measured water loss from soil evaporation and plant transpiration of a one acre plot of heavily watered cool season turf.

Kc = Crop coefficient of a plant type. The symbol PF (plant factor) is also commonly used. Kc is measured as the percentage of ETo that individual plants need to remain healthy and aesthetically acceptable.

Typical Kc values for several plant categories follow:

Cool season turf = 80% (0.80) of ETo
Warm season turf = 55-70% (.55-.70) of ETo
Ornamental drought tolerant plants = 40-60% (.40-.60)
Native or naturalizing plants = 25-35% (.25-.35)

These Kc figures are approximations generally accepted in the landscape industry. Individual plant performances may vary due to a variety of reasons such as microclimates, soil conditions, etc.

DU = Distribution Uniformity of the irrigation system. Sometimes the symbol IE or SE is used which represents Irrigation System Efficiency. They are approximately the same thing and are an indication of how evenly water is applied over the landscape area.

In general, newly installed spray systems have a DU of about 65% (.65). Large rotor systems (golf course systems) may be as high as 75-80% (.75-.80). Drip systems probably achieve 90-95% (.9-.95) uniformity/efficiency.

SITE WATER REQUIREMENTS

The following pages of this plan provide detailed information on seasonal water requirement estimates for the Happy Burger site. The information is provided on County prepared work sheets. Annual total site water use, and supporting calculations of seasonal use for each hydrozone are provided. (Note: this sample plan provides seasonal calculations for only one of the five hydrozones.)

NOTE TO READER:

THE COUNTY OF SAN DIEGO LANDSCAPE WATER CONSERVATION DESIGN MANUAL REQUIRES ONLY THAT ANNUAL LANDSCAPE WATER NEEDS BE CALCULATED. THE COUNTY'S LANDSCAPE WATER REQUIREMENTS WORK SHEETS, PART 1 AND 2, ARE FORMATTED TO ALLOW THE CALCULATION OF WATER REQUIREMENTS ON EITHER AN ANNUAL OR A SEASONAL BASIS. THIS PLAN UTILIZES SEASONAL CALCULATIONS.

COUNTY WORK SHEET, "LANDSCAPE WATER REQUIREMENTS WORK SHEET: PART 1", PROVIDES A SUMMARY OF THE TOTAL WATER USE ON SITE. A FORMAT IS PROVIDED FOR CALCULATING TOTAL WATER USE IN GALLONS, UNITS, AND ACRE FEET. THE CALCULATIONS SHOWN IN THIS SAMPLE PLAN REPRESENT THE COMBINED LANDSCAPE WATER NEEDS FOR ALL FOUR SEASONS OF ALL FIVE HYDROZONES.

COUNTY WORK SHEET, "LANDSCAPE WATER REQUIREMENTS WORK SHEET: PART 2", PROVIDES A FORMAT FOR CALCULATING WATER USE FOR EACH HYDROZONE. FOR EXAMPLE PURPOSES, THIS PLAN ONLY CALCULATES THE WATER REQUIREMENTS FOR HYDROZONE NUMBER ONE FOR EACH OF THE FOUR SEASONS. IF YOU CHOOSE TO PROVIDE SEASONAL CALCULATIONS IN YOUR PLAN, PLEASE PROVIDE CALCULATIONS FOR EACH SEASON OF EACH HYDROZONE.

COUNTY OF SAN DIEGO, DEPARTMENT OF PLANNING AND LAND USE

LANDSCAPE WATER REQUIREMENTS WORK SHEET: PART 1

(SITE TOTALS)

PROJECT NAME: HAPPY BURGER COUNTY PROJECT# _____

PROJECT ADDRESS: 1000 SWEETWATER CT. APN: 000-000-00

SPRING VALLEY WATER DISTRICT: HELIX

SITE LANDSCAPE WATER USE TOTALS

The following is a summary of the total annual landscape water requirements for the site.

TOTAL GALLONS OF WATER REQUIRED: 477,542
(add gallons from each hydrozone)

TOTAL UNITS OF WATER REQUIRED: (1 unit = 748 gal.) 638
(total gallons / 748 = units of water)

ACRE FEET OF WATER REQUIRED: 1.46
(total gallons / 326,000 = acre ft.)

MAXIMUM APPLIED WATER ALLOWANCE CALCULATION

The following is a calculation of the Maximum Applied Landscape Water Allowance on site. This calculation is for comparison purposes only. It assumes the entire landscape area is planted in cool season turf with a crop coefficient (Kc) of 0.8, and utilizes a spray system with a Distribution Uniformity (DU) of 0.65 (65%).

TOTAL LANDSCAPE AREA (in square feet): 21,298

MAXIMUM APPLIED WATER ALLOWANCE IN INCHES. = $\frac{ETo(51.32) \times 0.8}{0.65}$ = (63")

MAXIMUM USE GALLONS OF WATER = inches(63) X Landscape Area X (0.623) = (835,925)

MAXIMUM UNITS OF WATER = Total Gallons / 748 = (1,117.5)

MAXIMUM ACRE FEET OF WATER = Total Gallons / 326,000 = (2.56)

PERCENT SAVINGS = $\frac{\text{Max.Allow. - Actual Use}}{\text{Maximum Allowance}}$ = $\frac{(358,383)}{(835,925)}$ X 100 = 43 %

Note: This calculation may be made in gallons, units, or acre feet.

COUNTY OF SAN DIEGO, DEPARTMENT OF PLANNING AND LAND USE

LANDSCAPE WATER REQUIREMENTS WORK SHEET: PART 2

(HYDROZONE CALCULATIONS)

HYDROZONE DATA:

Hydrozone Number: 1

Hydrozone Area (Sq.ft.): 2990

Hydrozone Plant Type: COOL SEASON TURF
(turf, ornamental, native, etc)

Crop Coefficient (Kc): 0.80

Dist. Uniformity (DU): 0.65

Annual Refer. ET (ETo): 51.32

Seasonal ETo: 9.27
(winter), spring, summer, fall
(circle one)

HYDROZONE WATER USE CALCULATION:

FORMULA:

$\frac{\text{ETo X Kc}}{\text{DU}}$ = Annual water needs in inches for specified hydrozone

CALCULATION:

$\frac{\text{ETo}(9.27) \text{ X Kc}(0.8)}{\text{DU}(0.65)}$ = (11.5") inches of water per year for hydrozone.

GALLONS OF WATER FOR SPECIFIED HYDROZONE:

FORMULA:

Inches of water X Hydrozone area (in sq.ft.) X 0.623 (constant) = gallons of water per year for hydrozone.

CALCULATION:

Inches of water (11.5) X Hydrozone area (in sq.ft.) (2990) X .623 = 21,421 (gallons)

NOTES:

- Use one, "Work Sheet: Part 2", for each hydrozone.
- "Part 2", can be used for annual or seasonal calculations.
- Seasonal calculations are optional.

WMPWKSHT.002 revised 4/25/93

COUNTY OF SAN DIEGO, DEPARTMENT OF PLANNING AND LAND USE

LANDSCAPE WATER REQUIREMENTS WORK SHEET: PART 2

(HYDROZONE CALCULATIONS)

HYDROZONE DATA:

Hydrozone Number: 1

Hydrozone Area (Sq.ft.): 2990

Hydrozone Plant Type: ~~COOL SEASON TURF~~ (turf, ornamental, native, etc)

Crop Coefficient (Kc): 0.80

Dist. Uniformity (DU): 0.65

Annual Refer. ET (ETo): 51.32

Seasonal ETo: 8.15
winter, (spring), summer, fall
(circle one)

HYDROZONE WATER USE CALCULATION:

FORMULA:

$\frac{\text{ETo X Kc}}{\text{DU}}$ = Annual water needs in inches for specified hydrozone

CALCULATION:

$\frac{\text{ETo}(8.15) \text{ X Kc}(0.80)}{\text{DU}(0.65)}$ = (10") inches of water per year for hydrozone.

GALLONS OF WATER FOR SPECIFIED HYDROZONE:

FORMULA:

Inches of water X Hydrozone area (in sq.ft.) X 0.623 (constant) = gallons of water per year for hydrozone.

CALCULATION:

Inches of water (10) X Hydrozone area (in sq.ft.) (2990) X .623 = 18,627 (gallons)

NOTES:

- Use one, "Work Sheet: Part 2", for each hydrozone.
- "Part 2", can be used for annual or seasonal calculations.
- Seasonal calculations are optional.

WMPWKSHT.002 revised 4/25/93

COUNTY OF SAN DIEGO, DEPARTMENT OF PLANNING AND LAND USE

LANDSCAPE WATER REQUIREMENTS WORK SHEET: PART 2

(HYDROZONE CALCULATIONS)

HYDROZONE DATA:

Hydrozone Number: 1

Hydrozone Area (Sq.ft.): 2990

Hydrozone Plant Type: COOL SEASON TURF
(turf, ornamental, native, etc)

Crop Coefficient (Kc): 0.80

Dist. Uniformity (DU): 0.65

Annual Refer. ET (ETo): 51.32

Seasonal ETo: 30.12
winter, spring, (summer), fall
(circle one)

HYDROZONE WATER USE CALCULATION:

FORMULA:

$\frac{ETo \times Kc}{DU}$ = Annual water needs in inches for specified hydrozone

CALCULATION:

$\frac{ETo(30.12) \times Kc(0.8)}{DU(0.65)}$ = (37") inches of water per year for hydrozone.

GALLONS OF WATER FOR SPECIFIED HYDROZONE:

FORMULA:

Inches of water X Hydrozone area (in sq.ft.) X 0.623 (constant) = gallons of water per year for hydrozone.

CALCULATION:

Inches of water (37) X Hydrozone area (in sq.ft.) (2990) X .623 = 68,922 (gallons)

NOTES:

- Use one, "Work Sheet: Part 2", for each hydrozone.
- "Part 2", can be used for annual or seasonal calculations.
- Seasonal calculations are optional.

WMPWKSHT.002 revised 4/25/93

COUNTY OF SAN DIEGO, DEPARTMENT OF PLANNING AND LAND USE

LANDSCAPE WATER REQUIREMENTS WORK SHEET: PART 2

(HYDROZONE CALCULATIONS)

HYDROZONE DATA:

Hydrozone Number: 1

Hydrozone Area(Sq.ft.): 2990

Hydrozone Plant Type: COOL SEASON TURF
(turf, ornamental, native, etc)

Crop Coefficient (Kc): 0.80

Dist. Uniformity (DU): 0.65

Annual Refer. ET (ETo): 51.32

Seasonal ETo: 3.78
winter, spring, summer, (fall)
(circle one)

HYDROZONE WATER USE CALCULATION:

FORMULA:

$\frac{\text{ETo X Kc}}{\text{DU}}$ = Annual water needs in inches for specified hydrozone

CALCULATION:

$\frac{\text{ETo}(3.78) \text{ X } \text{Kc}(0.8)}{\text{DU}(0.65)}$ = (4.5") inches of water per year for hydrozone.

GALLONS OF WATER FOR SPECIFIED HYDROZONE:

FORMULA:

Inches of water X Hydrozone area (in sq.ft.) X 0.623 (constant) = gallons of water per year for hydrozone.

CALCULATION:

Inches of water (4.5) X Hydrozone area (in sq.ft.) (2990) X .623 = 8,382 (gallons)

NOTES:

- Use one, "Work Sheet: Part 2", for each hydrozone.
- "Part 2", can be used for annual or seasonal calculations.
- Seasonal calculations are optional.

WMPWKSHT.002 revised 4/25/93

WATER DELIVERY SYSTEMS

The irrigation system includes low-flow, matched precipitation rate heads, drip irrigation, check valves to prevent low head drainage, appropriate pressure regulation, an automatic controller suitable to both spray and drip irrigation, and a rain sensing automatic shut off device.

All spray heads should be adjusted to prevent overspray onto paved surfaces and walls. Overspray adjustments should be made during regular maintenance inspections.

Anticipated precipitation rates for the four hydrozones are as follows:

Hydrozone	Precipitation Rate
1	1.98 inches / hour
2	1.98 inches / hour
3	0.25 - 0.5 gpm
4	2.0 gallons / hour
5	0.30 inches / hour

A post installation water audit is recommended to determine actual precipitation rates and the distribution uniformity for the irrigation system.

SUMMARY OF WATER CONSERVATION METHODS AND WATER SAVINGS

This project is designed for efficient use and conservation of water resources. Plantings are grouped in hydrozones, bark mulches, bubblers, and drip irrigation are used where appropriate, and modern equipment such as low precipitation heads, automatic controllers, and a rain sensing device are used.

The landscape design for this project uses an estimated 43% less water than the same project designed using all cool season turf grass with a spray irrigation system.

The information provided in this plan can, if used properly, be an excellent guideline to the efficient application of water to the landscape throughout the year.

The plan will be of diminished value however, without continuous observation by qualified maintenance personnel. Plant observation for signs of stress must be made on a regular basis so that field adjustments can be made to watering schedules. Regular irrigation inspections must be made to assure proper functioning of irrigation equipment and even water distribution. Repairs of malfunctioning equipment and crooked heads should be made immediately. These practices, along with regular water audits will assure continued water application efficiency and a healthy landscape.

APPENDIX A
BIBLIOGRAPHY

The following is a short bibliography of landscape water management information sources. The list includes books, agencies, and organizations. It is by no means complete, but should serve as an adequate beginning point for the research enthusiast. This bibliography is provided for the reader's general information, and is not a required section of a water management plan.

EVAPOTRANSPIRATION DATA

1. LANDSCAPE IRRIGATION SYSTEM EVALUATION AND SCHEDULING FOR SAN DIEGO COUNTY, by David Shaw and Paul Zellman, available through the University of California Cooperative Extension, San Diego County, 5555 Overland Ave., Building 4, San Diego, CA 92123, Phone (619) 694-2845.

2. STATE MODEL WATER EFFICIENT LANDSCAPE ORDINANCE, developed and available through the State Department of Water Resources, Water Conservation Office, 1416 Ninth Street, Room 804, Sacramento, CA 95814. Phone (916) 653-1097

3. WATER MANAGEMENT IN THE LANDSCAPE, VOLUME ONE, a collection of articles, assembled by The San Diego Chapter of the American Society of Landscape Architects, Water Management Committee; available through ASLA San Diego Chapter, P.O. Box 33510, San Diego, CA 92163-3510, phone (619) 283-8818.

4. DAILY EVAPOTRANSPIRATION DATA. For continuously updated information phone 1-800-339-9954. CIMIS Log-in (916) 653-9347; CIMIS program (916) 327-1836.

   FOR MORE INFORMATION CALL:
   Department of Water Resources, (916) 327-1659
   Mission Resource Conservation District, (619) 728-1332
   San Diego County Farm Advisor (619) 694-2856.

CROP COEFFICIENT (PLANT WATER NEEDS) INFORMATION

1. LANDSCAPE IRRIGATION SYSTEM EVALUATION AND SCHEDULING FOR SAN DIEGO COUNTY, by David Shaw and Paul Zellman, available through the University of California Cooperative Extension, San Diego County, 5555 Overland Ave., Building 4, San Diego, CA 92123, Phone (619) 694-2845.

2. WUCOLS PROJECT, WATER USE CLASSIFICATION OF LANDSCAPE SPECIES, by L.R. Costello and K.S. Jones, available through the University of California Cooperative Extension.

3. WATER MANAGEMENT IN THE LANDSCAPE, VOLUME ONE, a collection of articles, assembled by The San Diego Chapter of the American Society of Landscape Architects, Water Management Committee; available through ASLA San Diego Chapter, P.O. Box 33510, San Diego, CA 92163-3510, phone (619) 283-8818.

GENERAL LANDSCAPE WATER CONSERVATION INFORMATION

1. WATER MANAGEMENT IN THE LANDSCAPE, VOLUME ONE, a collection of articles, assembled by The San Diego Chapter of the American Society of Landscape Architects, Water Management Committee; available through ASLA San Diego Chapter, P.O. Box 33510, San Diego, CA 92163-3510, phone (619) 283-8818.

2. SUNSET WESTERN GARDEN BOOK, by the editors of Sunset Books and Sunset Magazine, Lane Publishing Company, Menlo Park, California, 94025.

APPENDIX D

GARY L. PRYOR
DIRECTOR
(619) 694-2962

County of San Diego

SAN MARCOS OFFICE
338 VIA VERA CRUZ - SUITE 201
SAN MARCOS, CA 92069-2620
(760) 471-0730

EL CAJON OFFICE
200 EAST MAIN ST. - SIXTH FLOOR
EL CAJON, CA 92020-3912
(619) 441-4030

DEPARTMENT OF PLANNING AND LAND USE

5201 RUFFIN ROAD, SUITE B, SAN DIEGO, CALIFORNIA 92123-1666
INFORMATION (619) 694-2960

December 15, 1998

TO: Interested Persons

FROM: Gary L. Pryor, Director
Department of Planning and Land Use

RE: SUGGESTED PLANT LIST

On December 4, 1990, the San Diego County Board of Supervisors approved a drought tolerant plant list designed for the different life zones of the County. With the potential of another year of drought, the Board asked staff to devise a plant list that is appropriate for the different areas of the County (Coastal, Inland Valley, Mountain, and Desert). The intent of this list is to provide a few examples of plants that can naturalize or survive on their own after a few year of supplemental irrigation.

The plants listed are plants acceptable in fire prone areas and for areas defined as "Defensible Space" by local Fire Marshals.

The plants listed are arranged in alphabetical order and are cross referenced by the life zone best suited for them. If you need more information concerning these plants, we recommend that you contact a local nursery. Native plants may require a special order from your nursery. Additionally, there are several Southern California nurseries who specialize exclusively in native plants.

If you would like additional information on how to plant, what type of fertilizers to use or more general information about the County's plant list, you can purchase the County's Planting Manual for $2 at the grading counter. Another book that may be helpful for installing drought resistant plants is the Sunset Western Garden Book.

If you have any questions, with regard to this list or any other landscape matter, you may call either Dave Strickland at 694-3735 or Jane Badger at 694-2964.

GLP:DS:tf

AUTHOR\RPLTRJB-1298

COUNTY OF SAN DIEGO
PLANT LIST
AND
ACCEPTABLE PLANTS FOR A DEFENSIBLE SPACE
IN FIRE PRONE AREAS

KEY TO LOCATION/TYPE

C COAST
D DESERT
I INLAND, INTERMEDIATE
M MOUNTAIN

All plants on this list are considered to be drought-tolerant in the particular life zone noted. Those which grow best in riparian areas, as indicated by the (R), are the least drought-tolerant plants on the list.

Please Note: When installing any plants, it is necessary to deep water them to encourage the plant roots to seek natural moisture in the soil. This watering should continue for at least three years to naturalize. More water should be provided in summer and less (if any) in the winter. These plants should be weaned off the supplemental irrigation and become less dependent on it over the establishment period.

No plant is totally fire resistent. However the plants listed were chosen to due to their high water content, minimum amount of flamable resins and low fuel volume.

Definitions:

Defensible Space. The area around a structure, where material capable of causing fire has been cleared, reduced or changed, to act as a barrier between an advancing fire and the structure.

Establishment Period: The time it takes for a plant to become drought-resistant. This is usually a period of three years and is the time when supplemental irrigation is necessary.

Drought-Tolerant Plant Materials: Trees, shrubs, groundcovers, and other vegetation capable of sustained growth and reproduction with only natural moisture. Occasional supplemental irrigation is necessary only in extreme drought situations.
Native or Naturalizing Plant Species: Plant species native to the region or introduced which, once established, are capable of sustaining growth and reproduction under local climatic conditions without supplemental irrigation.

COUNTY OF SAN DIEGO SUGGESTED PLANT LIST

BOTANICAL NAME	COMMON NAME	LOCATION
TREES		
Acer		
platanoides	Norway Maple	M
rubrum	Red Maple	M
saccharinum	Silver Maple	M
saccarum	Sugar Maple	M
macrophyllum	Big Leaf Maple	C/ (R)
Alnus rhombifolia	White Alder	C/I/M (R)
Arbutus		
unedo	Strawberry Tree	All zones
Archontophoenix		
cunninghamiana	King Palm	C
Arctostaphylos spp.	Manzanita	C/I/D
Brahea		
armata	Blue Hesper Palm	C/D
edulis	Guadalupe Palm	C/D
Ceratonia siliqua	Carob	C/I/D
Cerdidium floridum	Blue Palo Verde	D
Cercis occidentalis	Western Redbud	C/I/M
Cornus		
nuttallii	Mountain Dogwood	I/M
stolonifera	Redtwig Dogwood	I/M
Elaeagnus		
angustifolia	Russian Olive	I/M
Eriobotrya		
japonica	Loquat	C/I/D
Erythrina caffra	Kaffirboom Coral Tree	C
Gingko biloba "Fairmount"	Fairmount Maidenhair Tree	I/M
Gleditisia triacanthos	Honey Locust	I/D/M
Juglans		
californica	California Walnut	I
hindsii	California Black Walnut	C/I
Lagerstroemia indica	Crape Myrtle	I/D/M
Ligustrum lucidum	Glossy Privet	I
Liquidambar styraciflua	Sweet Gum	C/I/M
Liriodendron tulipifera	Tulip Tree	I
Lyonothamnus floribundus		
ssp. asplenifolius	Fernleaf Catalina Ironwood	C
Melaleuca spp.	Melaleuca	C/I/D

BOTANICAL NAME	COMMON NAME	LOCATION
TREES		
Myoporum spp.	Myoporum	C/I
Nerium oleander	Oleander	C/I/D
Parkinsonia aculeata	Mexican Palo Verde	D
Pistacia		
chinensis	Chinese Pistache	C/I/D
vera	Pistachio Nut	I
Pittosporum		
phillyraeoides	Willow Pittosporum	C/I/D
viridiflorum	Cape Pittosporum	C/I
Platanus		
acerifolia	London Plane Tree	All zones
racemosa	California Sycamore	C/I/M
Populus		
alba	White Poplar	D/M
fremontii	Western Cottonwood	I
trichocarpa	Black Cottonwood	I/M
Prunus		
xblireiana	Flowering Plum	M
caroliniana	Carolina Laurel Cherry	C
cersifera 'Newport'	Newport Purple-Leaf Plum	M
ilicifolia	Hollyleaf Cherry	C
lyonii	Catalina Cherry	C
serrulata 'Kwanzan'	Flowering Cherry	M
yedoensis 'Akebono'	Akebono Flowering Cherry	M
Quercus		
agrifolia	Coast Live Oak	C/I
engelmannii	Engelmann Oak	I
suber	Cork Oak	C/I/D
Rhus		
lancea	African Sumac	C/I/D
Salix spp.	Willow	All zones (R)
Tristania conferta	Brisbane Box	C/I
Ulmus		
parvifolia	Chinese Elm	I/D
pumila	Siberian Elm	C/M
Umbellularia californica	California Bay Laurel	C/I

BOTANICAL NAME	COMMON NAME	LOCATION
SHRUBS		
Agave	Century Plant	D
americana	Desert Century Plant	D
deserti shawii	Shaw's Century Plant	D
Amorpha fruticosa	False Indigobush	I
Arbutus		
menziesii	Madrone	C/I
Arctostaphylos spp.	Manzanita	C/I/D
Atriplex		
canescens	Hoary Saltbush	I
lentiformis	Quail Saltbush	D
Baccharis		
glutinosa	Mule Fat	C/I
pilularis	Coyote Bush	C/I/D
Carissa grandiflora	Natal Plum	C/I
Ceanothus spp.	California Lilac	C/I/M
Cistus spp.	Rockrose	C/I/D
Cneoridium dumosum	Bushrue	C
Comarostaphylis		
diversifolia	Summer Holly	C
Convolvulus cneorum	Bush Morning Glory	C/I/M
Dalea		
orcuttii	Orcutt's Delea	D
spinosa	Smoke Tree	I/D
Elaeagnus		
pungens	Silverberry	C/I/M
Encelia		
californica	Coast Sunflower	C/I
farinosa	White Brittlebush	D/I
Eriobotrya		
deflexa	Bronze Loquat	C/I
Eriophyllum		
confertiflorum	Golden Yarrow	C/I
staechadifolium	Lizard Tail	C
Escallonia spp.	Escallonia	C/I
Feijoa sellowiana	Pineapple Guava	C/I/D
Fouqueria splendens	Ocotillo	D
Fremontodendron		
californicum	Flannelbush	I/M
mexicanum	Southern Flannelbush	I

BOTANICAL NAME	COMMON NAME	LOCATION
SHRUBS		
Galvezia		
juncea	Baja Bush-Snapdragon	C
speciosa	Island Bush-Snapdragon	C
Garrya		
elliptica	Coast Silktassel	C/I
flavescens	Ashy Silktassel	I/M
Heteromeles arbutifolia	Toyon	C/I/M
Lantana spp.	Lantana	C/I/D
Lotus scoparius	Deerweed	C/I
Mahonia spp.	Barberry	C/I/M
Malacothamnus		
clementinus	San Clemente Island Bush Mallow	C
fasciculatus	Mesa Bushmallow	C/I
Melaleuca spp.	Melaleuca	C/I/D
Mimulus spp.	Monkeyflower	C/I (R)
Nolia		
parryi	Parry's Nolina	I
parryi ssp. wolfii	Wolf's Bear Grass	D
Photinia spp.	Photinia	All zones
Pittosporum		
crassifolium		C/I
rhombifolium	Queensland Pittosporum	C/I
tobira 'Wheeleri'	Wheeler's Dwarf	C/I/D
undulatum	Victorian Box	C/I
viridiflorum	Cape Pittosporum	C/I
Plumbago auriculata	Cape Plumbago	C/I/D
Prunus		
caroliniana	Carolina Laurel Cherry	C
ilicifolia	Hollyleaf Cherry	C
lyonii	Catalina Cherry	C
Puncia granatum	Pomegranate	C/I/D
Pyracantha spp.	Firethorn	All zones
Quercus		
dumosa	Scrub Oak	C/I
Rhamus		
alaternus	Italian Blackthorn	C/I
californica	Coffeeberry	C/I/M
Rhaphiolepis spp.	Rhaphiolepis	C/I/D

BOTANICAL NAME	COMMON NAME	LOCATION
SHRUBS		
Rhus		
continus	Smoke Tree	M
integrifolia	Lemonade Berry	C/I
laurina	Laurel Sumac	C/I
lentii	Pink-Flowering Sumac	C/D
ovata	Sugarbush	I/M
trilobata	Squawbush	I
Ribes		
viburnifolium	Evergreen Currant	C/I
speciosum	Fuschia-Flowering Gooseberry	C/I/D
Romneya coulteri	Matilija Poppy	I
Rosa		
californica	California Wild Rose	C/I
minutifolia	Baja California Wild Rose	C/I
Salvia spp.	Sage	All zones
Sambucus spp.	Elderberry	C/I/M
Symphoricarpos mollis	Creeping Snowberry	C/I
Syringa vulgaris	Lilac	M
Tecomaria capensis	Cape Honeysuckle	C/I/D
Teucrium fruticans	Bush Germander	C/I
Toxicodendron		
diversilobum	Poison Oak	I/M
Verbena		
lilacina	Lilac Verbena	C
Xylosma congestum	Shiny Xylosma	C/I
Yucca		
schidigera	Mojave Yucca	D
whipplei	Foothill Yucca	I
GROUNDCOVERS		
Achillea	Yarrow	All zones
Aptenia cordifolia	Aptenia	C
Arctostaphylos spp.	Manzanita	C/I/D
Baccharis		
pilularis	Coyote Bush	C/I/D
Ceanothus spp.	California Lilac	C/I/M
Cerastium tomentosum	Snow-in-Summer	All zones
Coprosma kirkii	Creeping Coprosma	C/I/D
Cotoneaster spp.	Redberry	All zones
Drosanthemum hispidum	Rosea Ice Plant	C/I

BOTANICAL NAME	COMMON NAME	LOCATION
GROUNDCOVERS		
Dudleya		
brittonii	Britton's Chalk Dudleya	C
pulverulenta	Chalk Dudleya	C/I
virens	Island Live-Forever	C
Eschscholzia californica	California Poppy	All zones
Euonymus fortunei		
'Carrierei'	Glossy Winter Creeper	M
'Coloratus'	Purple-Leaf Winter Creeper	M
Ferocactus viridescens	Coast Barrel Cactus	C
Gaillardia grandiflora	Blanket Flower	All zones
Gazania spp.	Gazania	C/I
Helianthemum spp.	Sunrose	All zones
Lantana spp.	Lantana	C/I/D
Lasthenia		
californica	Common Goldfields	I
glabrata	Coastal Goldfields	C
Lupinus spp.	Lupine	C/I/M
Myoporum spp.	Myoporum	C/I
Pyracantha spp.	Firethorn	All zones
Rosmarinus officinalis	Rosemary	C/I/D
Santolina		
chamaecyparissus	Lavender Cotton	All zones
virens	Santolina	All zones
Trifolium frageriferum	O'Connor's Legume	C/I
Verbena		
rigida	Verbena	All zones
Viguiera laciniata	San Diego Sunflower	C/I
Vinca		
major	Periwinkle	C/I
minor	Dwarf Periwinkle	M
VINES		
Antigonon leptopus	San Miguel Coral Vine	C/I
Distictis buccinatoria	Blood-Red Trumpet Vine	C/I/D
Keckiella cordifolia	Heart-Leaved Penstemon	C/I
Lonicera		
japonica 'Halliana'	Hall's Honeysuckle	All zones
subspicata	Chaparral Honeysuckle	C/I
Solanum		
jasminoides	Potato Vine	C/I/D

BOTANICAL NAME	COMMON NAME	LOCATION
PERENNIALS		
Coreopsis		
gigantea	Giant Coreopsis	C
grandiflora	Coreopsis	All zones
maritima	Sea Dahlia	C
verticillata	Coreopsis	C/I
Heuchera maxima	Island Coral Bells	C/I
Iris douglasiana	Douglas Iris	C/M
Iva hayesiana	Poverty Weed	C/I
Kniphofia uvaria	Red-Hot Poker	C/I/M
Lavandula spp.	Lavender	All zones
Limonium californicum		
var. mexicanum	Coastal Statice	C
perezii	Sea Lavender	C/I
Oenothera spp.	Primrose	C/I/M
Penstemon spp.	Penstemon	C/I/D
Satureja douglasii	Yerba Buena	C/I
Sisyrinchium		
bellum	Blue-Eyed Grass	C/I
californicum	Golden-Eyed Grass	C
Solanum		
xantii	Purple Nightshade	C/I
Zauschneria		
californica	California Fuschia	C/I
cana	Hoary California Fuschia	C/I
'Catalina'	Catalina Fuschia	C/I
ANNUALS		
Lupinus spp.	Lupine	C/I/M
Eschscholzia californica	California Poppy	C/I/M/D